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NREL 01-36
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Amendments to the claims:

Please amend the claims as shown below.

1. (Currently amended) A composition comprising a genetically engineered purified polypeptide expressed in a heterologous host cell, with said polypeptide having cellulase activity and having at least 90% 99% identity to SEQ ID NO. 1.
2. (Currently amended) The composition of claim 1 wherein the polypeptide comprises a catalytic domain of a glycosyl hydrolase family 74 (GH74_Ace) enzyme defined as including the polypeptide sequence of SEQ ID NO: 3, a carbohydrate binding domain (CBD) III, a linker, and a signal sequence.
3. (Cancelled).
4. (Previously presented) The composition of claim 2 wherein the carbohydrate binding domain (CBD) III of the polypeptide is further defined as comprising a length of about 80 to about 150 amino acids.
5. (Previously presented) The composition of claim 2 wherein the carbohydrate binding domain (CBD) III of the polypeptide is further defined as comprising a length of about 90 amino acids.
6. (Cancelled).
7. (Previously presented) The composition of claim 2 wherein the carbohydrate binding domain (CBD) III is further defined as comprising the polypeptide sequence of SEQ ID NO: 4.
8. (Previously presented) The composition of claim 2 wherein the carbohydrate-binding domain (CBD) III is further defined as comprising the polypeptide sequence of SEQ ID NO: 5.
9. (Previously presented) The composition of claim 2 wherein said polypeptide comprises sequences identical to the polypeptides of SEQ ID NO: 3 and SEQ ID NO: 4.
- 10-11. (Cancelled)
12. (Currently amended) A genetically engineered purified polypeptide expressed in a heterologous host cell, said polypeptide having at least 90% 99% identity to SEQ ID NO: 1.

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13. (Cancelled)
14. (Previously presented) An industrial mixture suitable for degrading cellulose, such mixture comprising the polypeptide of claim 1.
15. (Previously presented) The industrial mixture of claim 14 further defined as comprising a detergent.
- 16-27 (Cancelled)
28. (Currently amended) A composition comprising a genetically engineered-purified polypeptide expressed in a heterologous host cell, said polypeptide having at least 90% 99% identity to [a] the polypeptide sequence selected from the group consisting of:
- a) SEQ ID NO: 3,; said polypeptide having catalytic activity of a glycosyl hydrolase family 74 (GH74 Ace) enzyme.
- b) ~~SEQ ID NO: 4;~~
- c) ~~SEQ ID NO: 5; and~~
- d) ~~SEQ ID NO: 1.~~
29. (Cancelled)
30. (Original) A fusion protein comprising the polypeptide of claim 28 and a heterologous peptide.
31. (Currently amended) The fusion protein of claim 30, wherein the heterologous peptide is a substrate targeting moiety and said substrate is a carbohydrate polymer.
32. (Original) The fusion protein of claim 30, wherein the heterologous peptide is a peptide tag.
33. (Previously presented) The fusion protein of claim 32, wherein the peptide tag is 6-His, thioredoxin, hemagglutinin, glutathione S-transferase, or OmpA signal sequence tag.
34. (Original) The fusion protein of claim 30, wherein the heterologous peptide is an agent that promotes polypeptide oligomerization.
35. (Original) The fusion protein of claim 34, wherein the agent is a leucine zipper.

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36. (Previously presented) A cellulase-substrate complex comprising the polypeptide of claim 28 bound to cellulose.

37-42 (Cancelled)

43. (Previously presented) A composition comprising the polypeptide of claim 28 and a carrier.

44-46. (Cancelled)

47. (Cancelled)

48. (Currently amended) The composition of claim 1 ~~47~~ wherein said polypeptide retains at least the same level of cellulase activity and thermal tolerability as those exhibited by the peptide of SEQ ID NO. 1.

49. (Cancelled)

50. (Currently amended) The A composition comprising a genetically engineered polypeptide expressed in a heterologous host cell, said polypeptide having at least 90% identity to SEQ ID NO. 1, said polypeptide comprising a ef claim 49 wherein said catalytic domain of a glycosyl hydrolase family 74 (GH74 Ace) enzyme GH74_Ace having a sequence identical to SEQ ID NO. 3 in each conserved position marked by an asterisk (*), as shown below in comparison to *Aspergillus aculeatus* Avicelase III (AvIII Aac):

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GH74_Ace      ATTQPYTWSNVAIGGGG-FVDGI VFNEGAPGILVVRTDIGGMYRWDAAANGRWIPLLDWVG
AviIII_Aac    AASQAYTWKNVVTTGGGGGFTFGIVFNPSAKCVAVARTDIGGAYRLNSDD-TWTPLMDNVWG
               *:~.*..**..*, **** *. ***** ~ * : ~ ***** ** : : ~ **::***
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GH74_Ace      WNNWGYNGVVSIAADPINTNKVVAAGVMYTNWDPNDGAILRSSDQGATWQITPLPFLKLG
AviIII_Aac    NDTWHDWGIDALATDPVOTDRVYVAGVMYTNWDPNVGSILRSTQGDWTWTETKLPFKVG
              :.*      * : : : : * : : : : : : : : : : : : : : : : : : : : : : :

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GH74_Ace GNMPPGRGMGERLAVDPNNNDNILYFGAPSGKGLWRSTDSGATWSQMTNFPDVGTVIANPTD
AviIII_Aac GNMPPGRGMGERLAVDPNKSILYFGARSGHGLWKSTDYGATWSNVTSFTWTGTYPQDSSS
*****::***** FK:***.*** *****:?.*.*.*

GH74_Ace TTGYSQSDIQGVVNVAFDKSSSSLGQASKTIFVGVADPNPNFVFWSRDGGATWQAVPGAP-T
AviIII_Aac T--YTSDPVGLAWVTFDSTSGSSGSATPRIFVGVADAGKSVFKSEDAAGATWAWVSGEPQY
* * * * *
* * * * *

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53. (Currently amended) A composition comprising a genetically engineered ~~purified~~ polypeptide expressed in a heterologous host cell, said polypeptide being characterized by a catalytic domain of a glycosyl hydrolase family 74 (GH74_Ace) enzyme and a carbohydrate binding domain (CBD) III, said catalytic domain of GH74_Ace having a sequence that is at least 90% ~~99%~~ identical to SEQ ID NO. 3.

54. (Currently amended) The composition of claim ~~53~~ 54 wherein said catalytic domain of GH74_Ace has a sequence identical to SEQ ID NO. 3.

55. (Currently amended) A composition comprising a genetically engineered polypeptide expressed in a heterologous host cell, said polypeptide having at least 90% ~~99%~~ identity to SEQ ID NO. 1.

56. (Currently amended) A composition comprising a genetically engineered polypeptide expressed in a heterologous host cell, said polypeptide comprising a sequence having at least 90% ~~99%~~ identity to SEQ ID NO. 3.

57. (New) A composition comprising a genetically engineered polypeptide expressed in a heterologous host cell, said polypeptide having at least 90% identity to the polypeptide sequence of SEQ ID NO: 4 and having carbohydrate binding activity.

58. (New) A composition comprising a genetically engineered polypeptide expressed in a heterologous host cell, said polypeptide having at least 90% identity to the polypeptide sequence of SEQ ID NO: 5 and having carbohydrate binding activity.

59. (New) A composition comprising a genetically engineered polypeptide expressed in a heterologous host cell, said polypeptide having means for providing cellulase activity as a glycosyl hydrolase 74 (GH74) family enzyme according to SEQID NO. 1.